ACC NR: AP6036760 SOURCE CODE: UR/0020/66/171/001/0088/0090

AUTHOR: Sirota, N. N.;(Academician AN BSSR); Ovseychuk, E. A.; Stribuk, Ye. K.

ORG: Institute of the Physics of Solids and Semiconductors, Academy of Sciences BSSR (Institut fiziki tverdogo tela i poluprovodnikov, Akademiya nauk BSSR)

TITLE: The effect of deformation on the superconductivity characteristics of niobium and vanadium

SOURCE: AN SSSR. Doklady, v. 171, no. 1, 1966, 88-90

TOPIC TAGS: superconductors, superconducting characteristics, niobium, vanadium, niobium superconducting characteristics, vanadium superconducting characteristics

ABSTRACT: Niobium and vanadium specimens (3 x 17 x 0.6 mm), annealed at 1100C for 6 hr and furnace cooled, were cold rolled with 23, 29, 43, 52, 74 and 92% reduction (vanadium) or 38, 57, 70 and 78% reduction. (niobium). It was found that the electrical conductivity and critical magnetic field increase linearly with increased reduction in rolling. For example, the intensity of the critical magnetic field at 4.2K, 1050 oer for annealed vanadium and 5000 oer for annealed niobium, increased to 1320 oer for vanadium rolled with 52% reduction and to 6300 oer for niobium rolled with 57% reduction. The critical temperature of transition to the superconducting state was not affected by deformation. It was concluded that the critical current density and critical magnetic field can be substantially increased by cold

 UDC: 536.483

ACC NR: AP6036760

deformation of superconductors which have high temperatures of recovery and recrystallization. Orig. art. has: 2 figures and 2 tables.

SUB CODE: 11, 20/ SUBM DATE: 13Jun65/ ORIG REF: 005/ OTH REF: 005/
ATD PRESS: 5107

Card 2/2

ACC NR: AT6026982 SOURCE CODE: UR/0000/66/000/000/0141/0143

AUTHORS: Pavlov, V. I.; Sirota, N. N.; Smolyakova, L. Ye.

ORG: none

TITLE: Magnetic properties of magnesium-manganese-zinc ferrites

SOURCE: Vsesoyuznoye soveshchaniye po ferritam. 4th, Minsk. Fizicheskiye i fiziko-khimicheskiye svoystva ferritov (Physical and physicochemical properties of ferrites); doklady soveshchaniya. Minsk, Nauka i tekhnika, 1966, 141-143

TOPIC TAGS: ferrite, magnetic permeability, hysteresis loop, magnesium compound, manganese compound

ABSTRACT: A systematic study of the static magnetic properties of ferrites of the triple system $MgFe_2O_4$-$MnFe_2O_4$ (having a stoichiometric composition) is described. The work was undertaken as a continuation of the earlier investigation of triple ferrites by N. N. Sirota and M. I. Danil'kevich (Sb. Ferrity i beskontaktnyye elementy. Izd. AN BSSR, Minsk 1963, str. 176--181). Using known ceramic techniques, specimens of 66 compositions of ferrites $Mg_xMn_{1-x-y}Zn_yFe_2O_4$ were prepared, with x and y varying by 0.1. Magnetic properties were measured on a ballistic instrument. The hysteresis loop was measured in a field of 20 oersted--the curve of initial magnetization, in fields up to 30 oersted. Variation of maximal magnetic permeability as a function of

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composition is shown in Fig. 1. Both magnetic properties and microstructure indicate

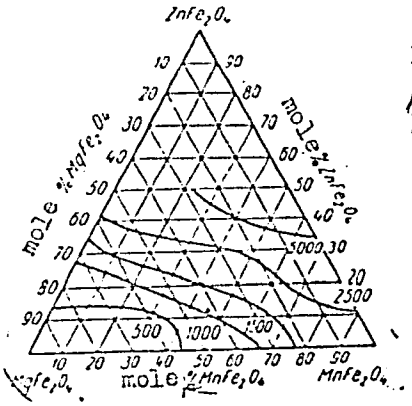

Fig. 1. Concentration function μ_{max} for ferrites of the system $MgFe_2O_4$-$MnFe_2O_4$-$ZnFe_2O_4$

that the system in question consists of a continuous series of solid solutions. The ferrite microstructure is characterized by a comparative fineness of grain. Orig. art. has: 4 figures.

SUB CODE: 11/ 20/ SUBM DATE: 22Dec65/ ORIG REF: 003

ACC NR: AT6028990 SOURCE CODE: UR/0000/66/000/000/0268/0271

AUTHORS: Bekbulatov, M. S.; Pavlov, V. I.; Sirota, N. N.

ORG: none

TITLE: Ferromagnetic resonance in magnesium-manganese-nickel ferrites

SOURCE: Vsesoyuznoye soveshchaniye po ferritam. 4th, Minsk. Fizicheskiye i fiziko-khimicheskiye svoystva ferritov (Physical and physicochemical properties of ferrites); doklady soveshchaniya. Minsk, Nauka i tekhnika, 1966, 268-271

TOPIC TAGS: ferrite, magnetic property, iron compound, magnesium compound, manganese compound, nickel compound

ABSTRACT: The ferro-resonance properties of magnesium-manganese-nickel ferrites were investigated. The technology of preparation and magnetic properties of the ferrites as well as the experimental procedure followed are described by V. I. Pavlov and N. N. Sirota (Sb. Ferrity i beskontaktnyye elementy. Izd. AN BSSR, Minsk, str. 119 and 197, 1963). The product of $H_c J_s$ -- the coercive force and magnetic saturation -- was determined as a function of composition, porosity, and anisotropy constant of the specimens. The experimental results are presented graphically (see Fig. 1). It was found that the concentration dependence of the magnitude of the resonance field was insignificant, varying between 3200--3400 oersteds for the system investigated.

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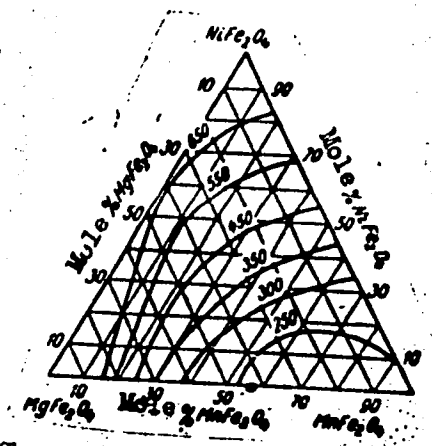

Fig. 1. Change in the product $H_c J_s$ as a function of the ferrite composition in the ternary system $MgFe_2O_4$--$MnFe_2O_4$ --$NiFe_2O_4$.

Orig. art. has: 4 graphs.

SUB CODE: 11/ 20/ SUBM DATE: 22Dec65/ ORIG REF: 004/ OTH REF: 002

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diagram of the experimental apparatus. Measurements of the heat conductivity were made with a temperature drop of 6-8°C. Calculation of the heat passing through the sample was made from the power of the

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ACC NR: AP6026963

heating furnace. All measurements were made in a vacuum $\geq 10^{-3}$ mm Hg. Based on the experimental data, the article gives curves for the heat conductivity of alloys of the InP--GaAs system with different compositions. The measurements showed that the heat conductivity of indium phosphide is of the order of 0.67/watt/cm-degree, and that of gallium arsenide 0.41 watts/cm-degree. It was found that with a rise in the concentration of the dissolved substance, the heat conductivity of the solid solution decreases considerably. Experimental results are compared with literature data, and the conclusion is drawn that these alloys are very promising for application in thermoelectric instruments. However, it is also indicated that with an increase in the degree of randomness, which is characterized by an increase in the entropy of the mixture, the heat conductivity drops considerably. Orig. art. has: 2 figures and 1 table.

SUB CODE: 11, 20/ SUBM DATE: 30Mar66/ ORIG REF: 005/ OTH REF: 007

Card 2/2

ACC NR: AP6036838 SOURCE CODE: UR/0020/66/171/002/0317/0319

AUTHOR: Sirota, N. N. (Academician AN BSSR); Osinskiy, V. I.

ORG: Institute of Solid State Physics and Semiconductors of the Academy of Sciences BSSR (Institut fiziki tverdogo tela i poluprovodnikov Akademii nauk BSSR)

TITLE: Emission from n-p junctions in crystals of indium phosphide -- gallium arsenide solid solutions

SOURCE: AN SSSR. Doklady, v. 171, no. 2, 1966, 317-319

TOPIC TAGS: indium compound, phosphide, gallium arsenide, solid solution, pn junction forbidden band, recombination radiation

ABSTRACT: This is a continuation of earlier work (Dokl. BSSR no. 9, 1964 and no. 4 1963) where it was established that a continuous series of solid solutions exists in the indium phosphide -- gallium arsenide system. The present study is devoted to the possibility of producing emission from n-p junctions made up of these solid solutions. The n-p junctions were made by diffusion of zinc from the gas phase. The reombination-radiation spectrum was investigated with a spectrometer (ISP-51). The maximum of the recombination spectrum of the n-p junction emission in indium phosphide at liquid-nitrogen temperature was previously found to be near 9000 Å and had the longest wavelength of all the investigated compositions. With increasing GaAs content,

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ACC NR: AP6036838

the wavelength of the maximum decreased, the shorter wavelength being obtained with n-p junctions containing 70% of GaAs. The calculated quantum energies corresponding to the maximum of the emission spectra, are close to the values of the forbidden-gap width, which later decreases as the temperature rises from 77 to 293K. A study of the temperature dependence of the emission spectra at constant current density shows that the intensity of the main line of the spectrum decreases with increasing temperature, the line width increases, and the spectral distribution shifts towards longer wavelengths. Plots showing the dependence of the wavelength of the maxima of the spectra on the composition, the spectral distribution of the n-p emission as a function of the temperature, and the temperature dependence of the quantum energy at the maximum of the emission for the various compositions are presented. It is concluded that crystals of alloys of the system indium phosphide--gallium arsenide can be used to produced radiating diodes, whose recombination radiation covers a broad range of wavelengths from visible to the near infrared region. The authors thank G. G. Shiyenok for help with the growing of the crystals and producing the emitting diodes. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 15Aug66/ ORIG REF: 005/ OTH REF: 003

Card 2/2

ACC NR: AT[illegible] SOURCE CODE: UR/0000/66/000/000/0162/0163

AUTHOR: Golodushko, V. Z.; Sirota, N. N. (Academician AN BSSR)

ORG: none

TITLE: Vapor tension of gallium antimonide

SOURCE: AN BSSR. Institut fiziki tverdogo tela i poluprovodnikov. Khimicheskaya svyaz' v poluprovodnikakh i termodinamika (Chemical bond in semiconductors and thermodynamics). Minsk, Nauka i tekhnika, 1966, 162-163

TOPIC TAGS: gallium compound, antimonide, vapor pressure, heat of sublimation, heat of formation

ABSTRACT: The authors measured the vapor tension over gallium antimonide by the effusion method (determination of the rate of evaporation through a small opening in a Knudsen cell), and measured the rate of evaporation from an open surface of the sample by the Langmuir method. The experimental procedure was the same as described earlier (in: Khimicheskaya svyaz' v poluprovodnikakh i tverdykh telakh [Chemical Bond in Semiconductors and Solids], Minsk, Nauka i tekhnika, 1965). Measurements made from Knudsen cells with different opening areas have shown that the evaporation coefficient is not equal to unity, since the experimental data did not fit a single straight line, but comprise several parallel lines. The heat of sublimation calculated from the slopes of these lines was found to be 102.9 ± 8 kcal/mole for Sb_4 over GaSb. The heat of formation of the gallium antimonide was 25.7 kcal/mole, whic[illegible]

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ACC NR: AT7003879

agreed well with mass-spectrometric calculations. Orig. art. has: 1 figure and 2 formulas.

SUB CODE: 20/ SUBM DATE: 20Aug66/ ORIG REF: 002/

Card 2/2

ACC NR: [illegible] SOURCE CODE: UR/0000/66/000/000/0208/0211

AUTHOR: Sirota, N. N. (Academician AN BSSR); Makovetskaya, L. A.

ORG: none

TITLE: Width of forbidden band and coefficient of linear expansion of semiconductor alloys InP-GaAs

SOURCE: AN BSSR. Institut fiziki tverdogo tela i poluprovodnikov. Khimicheskaya svyaz' v poluprovodnikakh i termodinamika [Chemical bond in semiconductors and thermodynamics). Minsk, Nauka i tekhnika, 1966, 208-211

TOPIC TAGS: semiconducting material, solid solution, indium compound, phosphide, gallium arsenide, forbidden band, thermal expansion

ABSTRACT: The authors investigated the variation of the forbidden band at room temperature by determining the edge of the optical absorption band, using polished thin plates and a procedure described earlier (DAN BSSR, v. VIII, no. 9, 572, 1964). The plots of the width of the forbidden band and of the lattice constant against the composition of the InP-GaAs alloys were similar to those obtained by others for other solid solutions of III - V compounds. The coefficient of linear expansion was measured with a quartz dilatometer in vacuum at temperatures of 270 - 600K, and the values of the characteristic temperature were calculated from the measured linear-expansion coefficient and the values of the lattice constant. Both the coefficient of linear expansion and the characteristic temperature showed a slight variation with

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ACC NR: AT7003881

the composition. This variation, however, together with the deviations observed in the width of the forbidden band from the additivity law and the deviations of the lattice-constant curve from the Vegard straight line, agree with the proposed increase of the energy of the interatomic interaction in the crystals as compared with the InPn-GaAs compounds. Orig. art. has: 3 figures, 3 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 20Aug66/ ORIG REF: 009/ OTH REF: 005

Card 2/2

ACC NR: AT7003433 SOURCE CODE: UR/0000/66/000/000/0217/0220

AUTHOR: Sirota, N. N. (Academician AN BSSR); Osinskiy, V. I.

ORG: none

TITLE: Effect of temperature on the quantum yield of radiative recombination in n-p junctions in InP

SOURCE: AN BSSR. Institut fiziki tverdogo tela i poluprovodnikov. Khimicheskaya svyaz' v poluprovodnikakh i termodinamika (Chemical bond in semiconductors and thermodynamics). Minsk, Nauka i tekhnika, 1966, 217-220

TOPIC TAGS: indium compound, phosphide, quantum yield, radiative recombination, np junction, temperature dependence, impurity center

ABSTRACT: This is a continuation of earlier work (DAN BSSR v. 9, no. 11, 720, 1965) dealing with the temperature dependence of the integral light flux of recombination radiation in n-p junctions in InP. The present paper deals with the role of the mean-square dynamic displacements in the temperature dependence of the quantum yield of radiative recombination of free carriers following injection through an n-p injector in InP. The experiments consisted of recording the intensity of the recombination radiation at the maximum of the spectral curve, the integral intensity at different injection levels and acceptor impurity concentrations, the width of the spectral curves, and also the change in the resistance of the sample. The results show that the intensity of recombination radiation at the maximum of the spectrum varies

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ACC NR: AT7003883

nearly exponentially with the temperature. The width of the spectral line is practically a linear function of the temperature and its magnitude corresponds to an energy of the order of kT. With increasing temperature, the quantum yield of the radiative recombination decreases, first rapidly, and then more slowly. The temperature dependence is qualitatively the same for different acceptor-center concentrations. The integral quantum yield of the radiative recombination varies practically linearly with the crystal-lattice phonon energy. The mean square dynamic displacements of the atoms increase greatly with rising diode temperature from nitrogen to room temperatures. It is concluded that an important role is played in the temperature dependence by the dynamics of the crystal lattice of the material from which the junction is made. This is borne out by comparison with results obtained elsewhere for gallium arsenide. Orig. art. has: 3 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 20Aug66/ ORIG REF: 003/ OTH REF: 001

Card 2/2

ACC NR: AT7003887 SOURCE CODE: UR/0000/66/000/000/0267/0270

AUTHOR: Sirota, N. N. (Academician AN BSSR); Bolvanovich, E. I.

ORG: none

TITLE: Investigation of the absorption spectra of solid solutions InSb-InAs in connection with the band structure

SOURCE: AN BSSR. Institut fiziki tverdogo tela i poluprovodnikov. Khimicheskaya svyaz' v poluprovodnikakh i termodinamika (Chemical bond in semiconductors and thermodynamics). Minsk, Nauka i tekhnika, 1966, 267-270

TOPIC TAGS: indium compound, solid solution, semiconducting material, semiconductor band structure, forbidden band, absorption spectrum, chemical bonding

ABSTRACT: To obtain data on the width of the forbidden band and other physical properties of the InSb-InAs solid solutions, the authors investigated the absorption spectra in bulk and film samples of the solid solutions prepared by different techniques. The spectra were plotted point by point with a spectrometer (IKS-2) with NaCl prism at room temperature. Plots are presented of the spectral dependence of the optical density of the InSb, of the InAs, and of their various solid solutions, of the dependence of the optical width of the forbidden band on the composition, and of the spectral dependence of the optical density of film samples. The results confirm that the width of the forbidden band depends on the composition of the solid solutions but not on the method of preparation of the material. Various deviations

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from the theoretical plots of the width of the forbidden band for both bulk and film samples are briefly discussed and it is indicated that there are not enough data for definite conclusions. The optical results obtained in the present paper agree with data obtained by electrical measurements (Hall effect). It is concluded that the differences in the structural states arising in bulk and film samples of the materials may lead to differences in the structures of their bands, and this possibility should be taken into account when discussing problems involving the chemical bond in semiconductors. Orig. art. has: 3 figures.

SUB CODE: 20/ 07/ SUBM DATE: 20Aug66/ ORIG REF: 001/ OTH REF: 003

Card 2/2

ACC NR: AP7001335 SOURCE CODE: UR/0428/66/000/004/0106/0109

AUTHOR: Sirota, N. N.; Brzhezinskiy, V. A.; Dyukov, V. G.; Karatsyuba, A. P.; Korshunov, F. P.; Lezzhov, Yu. F.; Chernyshev, A. A.

ORG: none

TITLE: Investigation of the effects of reactor radiation on the structure and parameters of silicon p-n junctions [Papers presented at the First Conference on Radiation Solid State Physics held on 8 September 1965 in Kiev]

SOURCE: AN BSSR. Vestsi. Seryya fizika-matematychnykh navuk, no. 4, 1966, 106-109

TOPIC TAGS: silicon, silicon semiconductor, neutron radiation, micrograph, pn junction, pn silicon

ABSTRACT: An investigation was made of the influence of the gamma neutron radiation of a reactor on changes in the structure and electrophysical parameters of p-n junctions, prepared by the diffusion method on n-type silicon with specific resistances of 2, 10, and 250 ohm · cm. The samples were irradiated in the

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vertical channel of a reactor of the AN BSSR. It was found that radiation causes considerable changes in the volt-ampere characteristics of silicon diffusion p-n junctions. These changes increase with the resistance of the original silicon base from which the p-n junction is prepared. Radiation (1.10^{15} n/cm^2) decreases the barrier capacity of the p-n junction and its dependence on the reverse voltage virtually disappears. The electron micrograph of the p-n junction, shifted on a bias of 30 v, showed no changes in the shape, location, and width of the p-n junction during this shift (after radiation). The width of the p-n junction after exposure was found to be independent of the bias voltage. It was possible to observe a drop of the direct voltage in the diode base having an initial specific resistance of 10 and 250 ohm · cm. It was also found that isochronous annealing at maximum of 350 C restores the direct branch of the volt-ampere characteristics of the p-n junction. Orig. art. has: 4 figures. [WA-095] [GC]

SUB CODE: 20/SUMB DATE: 25Jun66/ORIG REF: 003/OTH REF: 002/

Card 2/2

BELOUS, I.F. [Bilous, I.F.], red.; BOGDANOV, O.P. [Bohdanov, O.P.], red.; GUCHEK, I.V. [Huchek, I.V.], red.; MARCHENKO, I.K., red.; SIROTA, N.I., red.; STEPANOV, T.K., red.; FEDCHUN, O.K., red.; FESENKO, I.K., red.; SLUCHANSKIY, Sh. [Sluchans'kyi, Sh.], tekhred.

[The economy of Chernovtsy Province; statistical collection] Narodne hospodarstvo Chernivets'koi oblasti; statystychnyi zbirnyk. Chernivtsi, 1959. 171 p. (MIRA 13:6)

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SIROTA, N.P., kand.geograf.nauk

Physical geography districts of the Zhytomir Polesye. Nauk. zap. Kyiv. un. 17 no.1:49-58 '58. (MIRA 13:11)
(Zhytomir Province--Physical geography)

SIROTA, N.S.

Increase the production of buckwheat. Zemledelie 8 no.11:42-43 N '60. (MIRA 13:10)

1. Predsedatel' kolkhoza "Borets za mir", Kuzovatovskogo rayona, Ul'yanovskoy oblasti.
(Kuzovatovo District--Buckwheat)

SIROTA, M.S.; SELINA, Ye.Ya.

A book on buckwheat. Zemledelie 25 no.7:92-93 Jl '63. (MIRA 16:9)

1. Moldavskiy nauchno-issledovatel'skiy institut sel'skogo khozyaystva (for Sirota).

(Buckwheat)

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SO: Knizhnaya Letopis', No 36, 1956, Moscow.

SIROTA, R. R.

KRICHIN, D.G., dotsent (Chernovtsy); SIROTA, R.R. (Chernovtsy)

Rare combination of true rheumatic fever and miliary tuberculosis of the internal organs. Vrach. delo no.3:301-303 Mr '57 (MLRA 10:5)

1. Pervaya gorodskaya bol'nitsa.
(RHEUMATIC FEVER) (VISCERA--TUBERCULOSIS)

SIROTA, Sh.

Activity of the Chernovtsy Branch of the Society of Infectious Disease Specialists, Epidemiologists, and Microbiologists. Zhur. mikrobiol. epid. i immun. 32 no.5:156-157 My '61. (MIRA 14:6)
(CHERNOVTSY--MICROBIOLOGY)

SIROTA, S.F.

Capacity for action following fatal injuries. Sud.-med.ekspert. 2 no.2:52-53 Ap-Je '59. (MIRA 13:6)

1. Khersonskoye oblastnoye byuro sudebnomeditsinskoy ekspertizy (nachal'nik L.G. Boguslavskiy)
(WOUNDS AND INJURIES--JURISPRUDENCE)

SIROTI, P.M., inzh.

Phase of the origination of inverse firing in high-voltage ionic rectifiers. Elektrotekhnika 36 no.10:30-32 O '65.
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SIROTA, T.A., vrach-khirurg (selo Varvarovka Karlovskogo rayona Poltavskoy oblasti)

Nurses and midwives council of a rural hospital. Med.sestra 19 no.1:44-46 Ja '60. (MIRA 13:5)
(VARVAROVKA (POLTAVA PROVINCE)--NURSES AND NURSING)
(KZYL-ORDA PROVINCE--NURSES AND NURSING)

SIROTA, V.

Accounting for finished products in estimating wholesale prices.
Bukhg.uchet. 14 [i.e. 16] no.8:43-44 Ag '57. (MLRA 10:8)
(Wholesale trade--Prices)

SIROTA, Ye.K., inzh.; KISELEV, V.P., inzh.

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(MIRA 18:6)

24(3) SOV/56-36-4-14/70

AUTHORS: Belov, K. P., Sirota, Z. D.

TITLE: The Influence of the Atomic Ordering on Exchange Interaction in an Fe_3Pt-Alloy (Vliyaniye atomnogo uporyadocheniya na obmennoye vzaimodeystviye v splave Fe_3Pt)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4, pp 1058-1062 (USSR)

ABSTRACT: The magnetic properties of Fe-Pt-alloys with a composition that is a near approach to Fe_3Pt have, especially within range of the Curie point, a number of characteristic features. A contribution is made by this paper toward the research of these properties by the investigation of the influence exercised by atomic ordering upon magnetostriction and the accompanying paraprocesses in such alloys. Already Belov (Ref 4) has shown that such an investigation of magnetostriction may furnish data on the connection between exchange interaction and interatomic distances. Samples consisting of 58% by weight of Pt and 42% by weight of Fe were investigated near the stoichiometric composition Fe_3Pt. The Kurnakov point of this alloy was

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The Influence of the Atomic Ordering on Exchange Interaction in an Fe_3Pt-Alloy

between 900 - 1000°C. The samples had the shape of a bar of 150 mm length and 3 mm diameter. They were tempered at 1020°C in a vacuum furnace, after which they were chilled in water for the purpose of fixing the disordered state. The ordered state was established by annealing at 600°C over various periods of time (from 20 min to 12 hours). After each annealing the curve of the temperature dependence of magnetostriction was plotted (Fig 1); figures 2 and 3 show the course of these curves after annealing at 600°; they show the characteristic variations within the range of Curie point. Figure 4 shows the dependence of the spontaneous lattice deformation λ_s on the square of spontaneous magnetization σ_s. The course measured agrees with the thermodynamic theory according to which $\lambda_s = 1/6\gamma\sigma_s^2$ holds, where γ is the coefficient of spontaneous lattice deformation. Figure 5 shows the same as figure 4, but here the individual curves for each different period of annealing are given. λ increases linearly with increasing σ^2; this increase is all the more rapid, the shorter the time of

The Influence of the Atomic Ordering on Exchange Interaction in an Fe_3Pt-Alloy

annealing, (i.e. the lower the ordering), but the steepness of the straight line does not decrease linearly with an increase of the duration of annealing. It further holds that $d\theta/dP = -\gamma/\alpha'_\theta$; α'_θ denotes derivation of the thermodynamic coefficient α according to temperature, determined from the curve of real magnetization near Curie point. Figure 6 shows the temperature dependence of α near the Curie point in the case of orderings of different magnitudes, i.e. annealing for different lengths of time. The last part of this paper deals with the determination of $d\theta/dP$. Figure 7 shows the dependence of the shifting of Curie point on pressure, as well as the dependence of the coefficient γ and of Curie temperature on the degree of ordering. It was found that atomic ordering varies not only the magnitude of exchange interaction, but that it also influences the nature of its dependence on interatomic distances. There are 7 figures and 6 references, 4 of which are Soviet.

SOV/56-36-4-14/70

The Influence of the Atomic Ordering on Exchange Interaction in an Fe_3Pt-Alloy

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: October 22, 1958

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24 7600 1043, 1138, 1395

20330
S/188/60/000/006/003/011
B101/B204

AUTHORS: Svirina, Ye. P., Sirota, Z. D.

TITLE: Hall effect in Fe_3Pt alloy near Curie temperature

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, no. 6, 1960, 27-30

TEXT: It is the purpose of this paper to study the change in the Hall emf of an alloy, whose composition is a near approach to that of the Fe_3Pt (58% Pt, 42% Fe), near Curie temperature in dependence on temperature and thermal treatment. The Hall emf and the intensity of magnetization were measured according to a method described in Ref. 5. The specimen investigated was chilled either with 1000°C in water, or annealed for 6 hours at 600°C. Figs. 1 and 2 show the isothermal lines of the Hall emf for the chilled and for the annealed specimen. From the curves of the intensity of magnetization and of the Hall emf which take an analogous course, the spontaneous Hall emf E_s and the intensity σ_s of magnetization were thermodynamically calculated. Figs. 3 and 4 show these

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values as function of temperature. Herefrom a Curie temperature of 87.5°C is obtained for the chilled specimen, while 186°C is obtained for the annealed specimen. The increased Curie temperature and the electric resistivity, which is lower by 25%, of the annealed specimen led to the assumption that this specimen was partially ordered. The spontaneous Hall constant $R_s = E_s/\sigma_s$ increased with temperature up to Curie point. It was found that R_s in case of both specimens is a linear function of σ_s^2. In Ref. 5 it was shown that the Hall emf E of ferromagnetics in magnetic fields, which are larger than the field H_s of technical saturation, may be expressed by $E = R_o H + R_s \sigma_s + R_i \sigma_i$. R_o is the classical Hall constant, which determines signs and number of electricity carriers; R_i is the Hall constant of the true intensity of magnetization; σ_i is the intensity of magnetization of the para process. By differentiating (1) one obtains: $\partial E/\partial H = R_o + R_i \partial\sigma_i/\partial H$ (2), where $\partial E/\partial H = \chi_E$ is the susceptibility of the Hall emf within the region of the para process.

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Hall effect in Fe_3Pt...

$\partial\sigma_i/\partial H = \chi_i$ - the susceptibility of the para process. As shown by Fig. 7, there is a linear interrelation between χ_E and χ_i. The straight lines cut off a section on the ordinate, which corresponds to R_o. R_o is negative and depends only little on temperature and thermal treatment. From $R_o = 1/nec$ (n = number of conduction electrons, e = electron charge, c = velocity of light), $n = 6 \cdot 10^{20}$ cm^{-3} was calculated. The authors thank Professor K. P. Belov for discussions. [Abstracter's note: This is a nearly complete rendering of the original text.] There are 7 figures and 6 references: 4 Soviet-bloc.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Kafedra obshchey fiziki dlya biologov (Moscow State University, Department of General Physics for Biologists)

SUBMITTED: April 4, 1960

83711

S/056/60/039/004/004/048
B019/B070

24.4100

AUTHORS: Kamayev, G. I., Sirota, Z. D.

TITLE: The Anomalies of the Elastic Moduli and Internal Friction in an Fe_3Pt Alloy

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 4, pp. 1037-1041

TEXT: The authors give the results of measurements of the temperature dependence of Young's modulus and the internal friction of an alloy consisting of 58% by weight of Pt and 42% by weight of Fe, the composition corresponding very nearly to the compound Fe_3Pt. Young's modulus and the logarithmic decrement, which is proportional to the internal friction, were measured by the bending oscillations of a sample 187 mm long and 3 mm in diameter. The experimental arrangement is described in Ref. 3. The results of the experiments are graphically represented in Fig. 1, from which it is found that there is a large anomaly of Young's modulus and a pronounced maximum of the internal friction in the region of the ferromagnetic Curie point (71°C). The temperature-dependence of the change

Card 1/3

of the Young's modulus as a function of the field for different field strengths from 8.4 to 839 oersteds is shown in Fig. 2. This temperature dependence is designated as ΔE effect, and is found to have the usual character between 19 and 55°C. For fields between 500 and 800 oersteds the saturation has a positive effect, but for fields of less than 100 oersteds it has a negative effect. This ΔE effect is due to the domain structure, and also due to the decrease of the dynamic Young's modulus in the neighborhood of the Curie point caused by the interdomain spin ordering. In the last section of the paper, the experimentally observed field dependence of the Young's modulus is compared with the theoretically derived dependence. The theoretical calculation was made on the basis of the phase transition of the second kind and the thermodynamics of the non-equilibrium processes (Ref. 2). The calculated temperature dependence of E in the neighborhood of the Curie point is shown in Fig. 1 (dotted line). The difference between the theoretical and the experimental curves is explained by the inhomogeneity of the structure etc. The calculated value of the decrement in the region of the maximum is found to be several orders of magnitude higher than the experimental value. This could not be explained satisfactorily. The

83711

The Anomalies of the Elastic Moduli and Internal Friction in an Fe_3Pt Alloy

S/056/60/038/004/004/048
B019/B070

authors thank Professor K. P. Belov for his interest in the work. There are 4 figures and 8 references: 4 Soviet, 2 US, 1 German, and 1 Japanese.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: August 31, 1959

Card 3/3

MATEROVA, Ye .A.; ROZHANSKAYA, T.I.; SIROTA, Z.M.

Electrochemical properties of membranes from anion exchangers with different ionogenic group structure. Part 1: Nonexchange absorption of electrolytes by membranes. Elektrokhimiia 1 no.7: 794-799 Jl '65. (MIRA 18:10)

1. Leningradskiy gosudarstvennyy universitet imeni Zhdanova.

SIROTANOVIC, Ksenija

Synthesis of the mixed biscompounds of the aldehydes and ketones. III. o-, m-, and p-aryliden thiourethanes. Gl hem dr 23/24 no.5/6: 261-269 '58/59. (EEAI 10:4)

1. Faculty of Sciences, Institute of Chemistry, Beograd.
(Comples compounds) (Aldehydes) (Ketones)
(Thioacetic acid) (Benzaldehyde) (Aryl groups)
(Urethans)

SIROTANOVIC, Ksenija; JOKIC, Anka

Synthesis of the mixed bis-compounds of the aldehydes and ketones. IV. Synthesis of aryliden-phenylmercaptourethanes. Glas Hem dr 25/26 no.1/2:97-102 '61.

1. Faculty of Science, Institute of Chemistry, Beograd.

(Aldehydes) (Ketones)

SIROTANOVIC, Ksenija; ROCEN-BAJLON, Milka

Synthesis of the S-acetyl- and S-phenyl- α -acetylamino-thiolactic acid. (α -acetyl-(phenyl)-thio-propionic acid). Glas Hem dr 25/26 no.1/2:103-108 '61.

1. Faculty of Science, Institute of Chemistry, Beograd.

(Acetyl group) (Phenyl compounds) (Propionic acids)

SIROTANOVIC, Ksenija; EMINOVIC, Hajrija

Synthesis of mixed diderivatives of aldehydes and ketones. Pt. 5.
Glas Hem dr 25/26 no.8/10:497-507 '60/'61.

1. Faculty of Sciences, Institute of Chemistry, Beograd.

SIROTANOVIC, Ksenija; BAJLON-ROCEN, Milka; GALOVIC, Dragica

Addition of mercaptans to unsaturated aldehydes. Pt. 1. Glas Hem dr 25/26 no.8/10:509-518 '60/'61.

1. Faculty of Sciences, Institute of Chemistry, Beograd.

SIROTEK, Praveslav

Laboratory tubular furnace. Cs cas fys L4 no. 4:390-392 '64.

1. Chair of Solid State Physics, Faculty of Mathematics and Physics, Charles University, Prague.

SIROTENKO, A.A.

PROCESSES AND PROPERTIES INDEX

An investigation of the nonvolatile acids of Nicotiana glauca. A. A. Sirotenko. *Vsesoyuz. Inst. Tabach. i Makhorech. Prom.* No. 133, 123-30(in English 140)(1937).—Four acids have been demonstrated: oxalic, malic, succinic and citric. The methods of sepg. these are described in detail. I. S. Joffe

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SIROTENKO, A. A.

11 D

2A

The ability of the cells of the upper part of the tobacco plant (Nicotiana tabacum) to synthesize nicotine. M. F. Mashkovtsev and A. A. Sirotenko (All-Union Tobacco Inst., Krasnodar). *Doklady Akad. Nauk S.S.S.R.* 79, 487-9 (1951). Expts. with tobacco-tomato plant grafts definitely show that the production of nicotine is not characteristic of root cells alone and the alkaloid can be produced by any cell. In normal state only some 0.04% of it is formed by the upper part of the plant. In tobacco growing on tomato plant roots the alkaloid is concd. largely in the young leaves, in contrast to the normal plant.
G. M. Kosolapoff.

SIROTENKO, A.A.

Destruction of nicotine by tobacco plant roots in the process of starvation metabolism. M. F. Mashkovtsev and A. A. Sirotenko (Tobacco Inst., Krasnodar). *Fiziol. Rastenii* 3, 79–86(1956).—Nicotine in neutral salt form in a soln. into which cut roots of tobacco plants are placed rapidly enters the root tissues and is rapidly destroyed in the process of starvation metabolism. Some 70–80% of N is changed to NH_3, the rest goes to protein N and water-sol. N. G. M. Kosolapoff

MASHKOVTSEV, M.F.; SIROTENKO, A.A.

Colorimetric method for determining the amount of nornicotine in the presence of nicotine and anabasine. Izv. vys. ucheb. zav.; pishch. tekh. no.5:156-166 '61. (MIRA 15:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tabaka i makhorki.
(Tobacco--Analysis and chemistry) (Nornicotine)

133-8-6/28

AUTHORS: Bezdenezhnykh, A.A. and Bigeyev, A.M. (Cands.Tech.Sci.), Dikshteyn, Ye.I., Perchatkin, P.N. and Sirotenko, A.I., (Engineers).

TITLE: The development of the deoxidation process of rimming steel. (Usovershenstvovaniye tekhnologii raskisleniya kipyashchey stali).

PERIODICAL: "Stal'" (Steel), No.8, 1957, pp.701-707 (USSR).

ABSTRACT: An investigation of factors causing substantial variation in manganese losses during deoxidation of quality low carbon rimming steels (08 кп Н, 08 кпГ, 08 кп рГ and 08 кп chemical composition is given in Table 1), produced in 400 t open hearth furnaces was carried out. The following students of MGMI participated in the investigation: V. Antipin, N.Kuskov, B.Khorshun and others. The composition of pig used varied within comparatively wide limits, % C 4.1-4.5, Mn 0.15-0.25, Si 0.65-1.0; S 0.025-0.055; P 0.085-0.150. The limits of composition of metal and slag during the individual smelting periods are given. The composition of metal before deoxidation %: C 0.06-0.09; Mn 0.04-0.09; S 0.030-0.033; P 0.007-0.010; slag: CaO 43-46; SiO_2 11-17, FeO 10-20. For the deoxidation of steel the whole required amount of ferromanganese was added to the

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The development of the deoxidation process of rimming steel. (Cont.)

both in one lot at the beginning of tapping. Some retention of steel in the furnace after the above addition was used only when ferromanganese contained more than 1% of Si. Maximum possible manganese loss was calculated using A.M. Bigeyev's formula:

$$U_{max} = \frac{77.5\ K_{Mn}(FeO)q}{100 + 0.775\ K_{Mn}(FeO)q} \qquad (1)$$

where: q - relative proportion of slag %; K_{Mn} - equilibrium constant of the deoxidation reaction [Mn] + [FeO] = (MnO) + Fe l. The dependence of maximum manganese losses in the furnace at 1600 C on the amount of slag and its FeO content is shown in Fig.1 and the frequency distribution of total manganese losses during deoxidation of low carbon rimming steel in 400 t furnaces (170 melts) in Fig.2. The maximum manganese losses during deoxidation can vary between 60 and 70% while actual losses varied from 30 to 70% (average 40-50%), therefore to obtain metal of a required composition the

The development of the deoxidation process of rimming steel. (Cont.)

influence of the following factors on manganese losses was studied. 1) The influence of retention time in the furnace after deoxidation; 2) Duration of tapping (Fig.3); 3) The influence of metal temperature before deoxidation; 4) The influence of FeO content in slag (Fig.5). This influence becomes obvious only at FeO content above 12-14%; 5) The influence of silicon content in ferro-manganese (Fig. 6); 6) The influence of carbon content of metal before deoxidation (Fig.7) and as during decarburisation of steel 08 kp ore additions are often made (1-1.5 t) not long before deoxidation, the influence of this addition was also studied (Fig.8). On the basis of the data obtained the consumption of ferromanganese for deoxidation for [illegible] conditions was calculated, using a formula derived by A.M. Bigeyev:

$$T_{FeMn} = 10^5 \frac{T([Mn]f - [Mn]r)}{[Mn]_{FeMn} \cdot (100-U_{Mn})}$$

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where: T_{FeMn} - consumption of ferromanganese for the deoxidation of the whole charge of steel in kg.; T -

The development of the deoxidation process of rimming steel. (Cont.)

furnace capacity, tons; [Mn]f - manganese content of finished steel %; [Mn]r - residual manganese content in steel before deoxidation, %; U_{Mn} - total manganese losses (in furnace, runner and ladle), %. The frequency distribution of residual manganese content before deoxidation is given in Fig.9. To facilitate calculations under works conditions, tables were prepared (2 and 3) of required ferromanganese additions for various operating conditions encountered in practice. An example of calculations is given. It is stated in conclusion that the application of the method of calculating the required ferromanganese additions in practice decreased the consumption of the latter by 1 - 1.5 kg/ton of steel and prevented the production of metal outside the composition required.

There are 3 tables, 9 figures and 5 Slavic references.

ASSOCIATION: Magnitogorsk Mining-Metallurgical Institute and MMK. (Magnitogorskiy Gorno-Metallurgicheskiy Institut i MMK).

AVAILABLE: Library of Congress
Card 4/4

RED'KIN, V.Ye.; RYLOV, S.V.; SIROTENKO, A.P.

Manufacture of plastic machine-tool parts. Stan. i instr. 34 no.12: 20-21 D '63. (MIRA 17:11)

FROM, A.A.; SIROTENKO, A.V.

Mechanism of the action and prospects for the use of low-molecular polyvinyl pyrrolidinone in the burn disease. Probl. gemat. i perel. krovi 9 no.9:18-21 S '64. (MIRA 18:7)

1. TSentral'nyy ordena Lenina institut gematologii i perelivaniya krovi (direktor - dotsent A.Ye.Kiselev) Ministerstva zdravo-okhraneniya SSSR, Moskva.

ACC NR: AP6029868 (A,N) SOURCE CODE: UR/0399/66/000/008/0059/0063

AUTHOR: Krasil'nikova, A. M.; Mikhaylova, Yu. M.; From, A. A.; Sirotenko, A. V.

ORG: Municipal clinical infectious Hospital No. 7/Chief Physician N. O. Zalesk e / (Infektsionnaya gorodskaya klinicheskaya bol'nitsa no. 7); Department of Infectious Diseases/headed by Prof. K. V. Bunin/I Moscow Order of Lenin and Order of the Red Banner of Labor Medical Institute im. I. M. Sechenov (I Moskovskiy meditsinskiy institut); Central Order of Lenin Institute of Hematology and Blood Transfusion/ Director Docent A. Ye. Kiselev/(Tsentral'nyy institut gematologii i perelivaniya krovi)

TITLE: Treating food poisoning with Polosukhin fluid and polyvinylpyrrolidone agents

SOURCE: Sovetskaya meditsina, no. 8, 1966, 59-63

TOPIC TAGS: food poisioning, disease treatment, drug side effect, digestive drug, digestive system disease

ABSTRACT: Victims of food poisoning suffering from collapse were treated with Polosukhin fluid, administered intravenously in 300—500 ml doses (in fluid therapy with physiological salt solution and

Card 1/2 UDC: 616.9-022.38-039:616.3-008.1]-085.391

ACC NR: AP6029868

glucose solution, Cordiamin, caffeine, ephedrine, and sometimes mezaton or norepinephrine). Diagnosis was confirmed by laboratory identification of *Salmonella* bacteria in 47 of the 100 patients. Polosukhin fluid was generally effective against collapse caused by food poisoning except in 5% of cases, but produced side effects. Polyvinylpyrrolidone agents were given intravenously to 114 patients with acute food poisoning (not always in collapse) in a dose of 300 ml (in one variant also with Cordiamin, Caffeine, ephedrine, or mezaton). Polyvinylpyrrolidone agents proved to be rapid and effective detoxicants with no side effects. Polyvinylpyrrolidone agents detoxify by binding toxins in the blood vessels and by diuretic action. [WA-50; CBE No. 12]

SUB CODE: 06/ SUBM DATE: none/ ORIG REF: 003/ OTH REF: 003/

Card 2/2

SIROTENKO, D.Ya.; LYSAK, L.I.

Effect of chromium and cobalt on changes in certain properties of iron at high degrees of cold plastic deformation. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.10:40-45 '59. (MIRA 13:9)
(Iron alloys--Testing) (Deformations (Mechanics))

KRYLOV, G.M.; SIROTENKO, G.F.

Identification of dicalcium silicate alpha-hydrate in hydrotheraml cement products by infrared spectroscopy. Uzb. khim. zhur. no. 2:13-18 '60. (MIRA 14:1)

1. Institut khimii AN UzSSR.
(Calcium silicate—Spectra)

SIROTENKO, G.Z.; SADOVNIKOV, G.P.

New pneumatic turning hoists. Mashinostroenie no.4:16-17 Jl-Ag '63. (MIRA 17:2)

SIROTENKO, I.; VLASKOV, I.

Use of the exhaust gases of a jet plane engine for drying corn on the cob in the Velichkov grain receiving center. Muk.-elev. prom. 28 no.2:10-11 F '62. (MIRA 15:3)

1. Direktor Velichkovskogo khlebopriyemnogo punkta (for Sirotenko).
(Velichkov--Corn (Maize)--Drying)

S/109/60/005/008/023/024
E192/E382

9.3120 (1043, 1137, 1140)

AUTHORS: Sirotenko, I.G., Spivak, G.V. and Groman, A.

TITLE: Field Emission from Filamentary Semiconductor Monocrystals or Whiskers

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol. 5, No. 8, pp. 1348 - 1350

TEXT: The work reported deals with the manufacture of semiconductor whiskers and measurement of their field emission. It appears that the data relating to the field emission of such monocrystals are lacking (Refs. 7, 8). The whiskers of tungsten and molybdenum oxides obtained by the authors are larger than the usual micro-whiskers. The whiskers are produced by the following technique. A small quantity of tungsten or molybdenum oxide was placed in a quartz tube having a length of 15 cm and a diameter of 6 mm, the tube being closed at one end. The oxides were obtained by burning fine wires in an oxygen atmosphere. By heating the lower end of the tube in air a sublimation of the oxides was achieved and the vapours condensed on the comparatively cold portions

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E192/E382

Field Emission from Filamentary Semiconductor Monocrystals or Whiskers

of the tube (see Fig. 1). A growth of whiskers occurred at various areas of the tube, depending on the concentration of the vapours and the temperature gradients. At very high vapour concentrations the whiskers were in the form of dendrites. In order to obtain the whiskers in a suitable form, a metal loop was introduced into the quartz tube and the whiskers were grown on it (Fig. 1). After that the wire loop was suitably mounted in a gun and investigated. In the case of molybdenum oxide, the whiskers were also obtained by the following method: a spiral having a diameter of 5 mm and a length of 5 cm was made of molybdenum wire and one of its ends was bent in the shape of a loop; this was then placed inside the spiral so that the end of the loop was roughly in the centre of the spiral; when the end of the spiral was heated by an oxygen flame the molybdenum was oxidised and the resulting oxide vapours were condensed on the loop in the form of whiskers. The whiskers were investigated

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S/109/60/005/008/023/024
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Field Emission from Filamentary Semiconductor Monocrystals or Whiskers

in a micro-projector tube which was evacuated by means of a fore-vacuum and an oil-diffusion pump. It was found that at pressures of 10^{-6} - 10^{-7} mm Hg and voltages of 6-9 kV the emission of the whiskers was unstable but in a vacuum of 10^{-8} mm Hg the stability was satisfactory and the current was of the order of 10-30 μA. The authors express their gratitude to N.V. Kovaleva for help in the measurement of field emission. There are 5 figures and 9 references: 3 Soviet and 6 non-Soviet.

Card 3/4

S/109/60/005/008/023/024
E192/E382

Field Emission from Filamentary Semiconductor Monocrystals or Whiskers

Fig. 1:

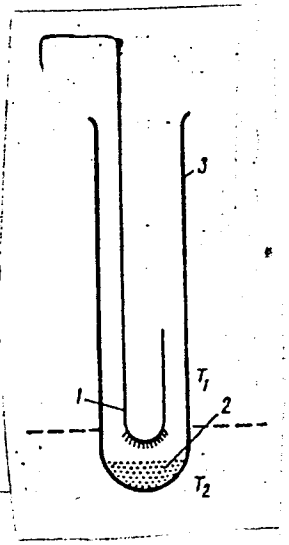

Рис. 1. Рост вискерсов окиси W на проволочной петле:

1 — W-проволока; *2* — окись W; *3* — кварцевая трубка; *T* — комнатная температура; T_2 — 1000°C для окиси W и ~ 700° C для окиси Mo

Card 4/4

SUBMITTED: December 21, 1959

Sirotenko, I. G.

82164
S/048/60/024/06/09/017
B019/B067

9.4300

AUTHORS: Sirotenko, I. G., Spivak, G. V.

TITLE: Pickling Demolition of Semiconductors by Ion Bombardment

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 6, pp. 679-684

TEXT: This is the reproduction of a lecture delivered at the 9th All-Union Conference on Cathode Electronics from October 21 to 28, 1959 in Moscow. Cathode sputtering of semiconductor crystals and monocrystals is investigated (germanium, silicon, ferrites). The aim of the present paper was to extend the pickling by ion bombardment to a larger number of semiconductors, to get to know the type of sputtering for semiconductors, and to develop the pickling demolition of the semiconductor surface as they occur in electronic devices and disturb operation. The initial cathode sputtering of semiconductor for the ion-pickling by the glow discharges in two-electrode tubes filled with rare gases showed poor results. Better results were obtained by treating the targets in plasmas with high current density and low pressure. The pickled germanium crystal surfaces shown

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Pickling Demolition of Semiconductors by Ion Bombardment

in Figs. 1 to 4 show symmetrical, oriented pickling patterns obtained at a current density of 3 - 8 ma.cm^{-2} and a voltage of 1 kv. Pressure was in the range of from $2 \cdot 10^{-2}$ to 10^{-3} torr. In a detailed discussion of the formation of these patterns on sputtering, a number of papers is dealt with. In this discussion, the authors arrive at the conclusion that the oriented patterns are formed either by the growth of crystals from condensed vapor, or from the capture of flying atoms by the surface. There are 12 figures and 12 references: 5 Soviet and 6 American.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im. M. V. Lomonosova
(Physics Department of Moscow State University imeni M. V. Lomonosov)

Card 2/2

YURASOVA, V.YE., SIROTENKO, I.G., BUKHANOV, V.M.

"On the pecularities of the anisotropy of the monocristal cathode sputtering."

Rpeort submitted for the Colloquium on Ionic Bombardment,
National Center of Scientific Research, Bellevue 4-8 Dec 1961

SIROTENKO, I.G.; SPIVAK, G.V.

Exposure of boundary dislocations in germanium by ionic bombardment. Kristallografiia 6 no.2:274-277 Mr-Ap '61. (MIRA 14:9)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Germanium) (Dislocations in crystals) (Ions)

25791
S/048/61/025/005/005/024
B104/B201

24,2200

AUTHORS: Spivak, G. V., Sirotenko, I. G., and Ivanov, R. D.

TITLE: Domain structure of ferromagnetic films produced by cathode sputtering

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25, no. 5, 1961, 581-583

TEXT: The present investigation was the subject of a lecture delivered at a symposium on thin ferromagnetic films (Krasnoyarsk, July 4 to 7, 1960). Cathode sputtering was performed in a plasma under an intense discharge and at a low pressure ($2 \cdot 10^{-2}$ - 10^{-3} mm Hg). The free-path length of sputtered atoms was somewhat longer than the distance between target and base layer. The specimen intended for sputtering was connected as the third electrode with a negative potential of 1 kv. A hot cathode served for augmenting discharge current and ion density. The discharge current was of the order of 1 ampere, while that directed onto the specimen to be sputtered was of the order of 1 milliampere. The base layers were made of glass and arranged at a distance of 2 - 3 cm from the

Card 1/4

Domain structure of ferromagnetic ...

target. The specimens to be sputtered were disk-shaped and had an area of about 1 cm^2. The film thickness of permalloy specimens (79% Ni, 17% Fe, 4% Mo) changed linearly with the sputtering time (30-35 minutes), when the specimen potential was 800 v, the discharge current was 0.75 a, the current density to the specimen was 1.6 $ma \cdot cm^{-2}$, and the pressure was $9 \cdot 10^{-3}$ mm Hg. At the same time, the temperature of the specimens ranged from 100 to 125°C. The films formed in a 175-200 oersted magnetic field which was oriented in parallel to the film plane. No annealing processes took place in a magnetic field. Spectroscopic analyses showed that there was no difference between the composition of sputtered films and that of the initial material. The authors were able to observe magnetic powder patterns on 800 Å thick cobalt films. The direction of easiest magnetizing coincided with the magnetic field direction during the process of film sputtering. The sputtering of iron silicide took place under the following conditions. the specimen potential relative to the cathode was 700 v, the current density was 6 $ma \cdot cm^{-2}$, the discharge current was 1 a, the pressure was $8 \cdot 10^{-3}$ mm Hg. The sputtering times were 10, 20, and 30 minutes. The wedge-shaped powder patterns observed on iron silicide

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B104/B201

Domain structure of ferromagnetic ...

films with 3% Si were oriented in the field direction. In films of the abovementioned permalloy composition, produced under "linear" conditions, the sputtering rate had to be increased sharply (discharge current 1 a, potential of specimen 1.2 kv, current density to specimen 2.6 ma/cm^2, pressure $8 \cdot 10^{-3}$ mm Hg) to obtain distinct powder patterns. Differently thick films of this type showed the domains to divide into equal intervals from the thickness of 500 Å onwards. In addition, the domain structure is somewhat increased with larger thicknesses, and the wedges extend in the field direction. On a further increase the wedges are transformed into planes with parallel sides which are oriented in the field direction. The configuration of the domains becomes disordered at 5000 Å. Experimental results are summarized as follows: (1) films can be easily prepared from any material by catnode sputtering; (2) films of defined thicknesses can be obtained under well controlled production conditions; (3) a good uniformity of sputtering and a sufficient rapidity of film preparation are ensured; (4) films thus produced do not differ essentially from the initial material as to their composition. There are 2 figures and 7 non-Soviet-bloc references.

Card 3/4

25791
S/048/61/025/005/009/024
B104/B201

Domain structure of ferromagnetic...

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im. M. V. Lomonosova (Division of Physics, Moscow State University imeni M. V. Lomonosov)

Card 4/4

24806
S/048/61/025/006/006/010
B117/B212

9.4300

AUTHORS: Strotenko, I.G., Spivak, G.V., Stoyanova, I.G. and Osad'ko, Z.M.

TITLE: Electron microscopic study of thread-like semiconductor crystals

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25 no. 6, 1961, 735-738

TEXT: The present paper has been presented at the 3rd All-Union Conference on Electron Microscopy held in Leningrad from October 24 to 29, 1960. The authors investigated thread-like crystals of tungsten and molybdenum oxides with the use of a [illegible] emission electron microscope. This model (Ref.?: Stoyanova I.G., Zaytsev P.V., Pribory i tekhnika eksperim., №3, 138 ('959)) was developed for investigations in gas media. Tungsten or molybdenum loops with the thread-like crystals grown on them were put in the object chamber of such a microscope for electron-microscopic or electron-diffraction studies. Form and condition of the surface of the thread-like semiconductor crystals were studied together with the form of their points. Electron-diffraction studies showed that thread-like crystals

Card 1/4

24805
S/048/61/025/006/006/010
B117/B212

Electron-microscopic study

of tungsten and molybdenum oxides are monocrystals. A 2,000-fold magnification shows tungsten oxide crystals to be straight and to have a constant cross section. The points appear flattened and the faces smooth. A close study shows protrusions of the faces of some crystals, which seem to form a spiral around the crystal. This is distinctly shown by a ~ 500-fold magnification. Crystals of small and large size vary greatly for each crystal. It seems that the crystals first grow in one direction till they reach a certain length and then their radial growth starts. Due to the growth of new layers the crystals become thicker. The number of molybdenum-oxide crystals growing per unit area of wire is much smaller than that of tungsten-oxide crystals; also their form is different, which might be caused by their growth conditions. They are straight and have smooth faces without protrusions. Very seldom they are conical and have pointed ends. The tungsten-oxide and molybdenum-oxide crystals grown on a wire loop were mounted in an autoelectronic projector. The vacuum was created by a fore-pump and a mercury diffusion pump. After annealing the tube and freezing out the mercury vapor, a vacuum of 10^{-7} mm Hg was reached, which was improved with the help of a titanium diffuser. At a potential of 4 - 7 kv there appear single blurred luminous spots on the screen on the projector, which

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Electron-microscopic study ...

correspond to the emission of the various thread-like crystals. The image might change when the potential is raised: The images of single thread-like crystals (of smaller diameter) disappear, while the images of others appear. The crystals resist a lasting heating to red heat of the wire. Due to the heating of the crystals, the same emission current will be observed with a potential increase. Some emission images disappear and the screen luminesces evenly. It is assumed that the ends are rounded off during heating and the images of some crystals overlap. Quite often one can see images on the screen, which consist of four individual luminous spots. Sometimes it can be observed how the image is rotating by 90° around its axis. This might take place under the effect of ion bombardment of residual gases. Very seldom it was observed that a sudden rotation took place when increasing the potential, with a subsequent disappearance of the image. It is possible that these phenomena are related to the occurrence of a screw crystal emission and to a stripping of these crystals by the field. Investigations of the thread-like crystals after the test showed that their ends become pointed due to ion bombardment. The ion bombardment is the main cause for the instability of cold cathodes (Ref.5: Elinson M.I., Vasil'yev G.V., Avtoelektronnaya emissiya. Fizmatgiz, M., 1958). A fairly stable

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Electron-microscopic study ...

current can be expected from crystals having the form of straight needles of a small diameter. Studies of the effect of ion bombardment on the emission properties of thread-like crystals showed that the emission current increases by a multiple and reaches up to 300 μa. The stability of the emission current also increases. At the same time, more four-leaf images can be observed on the screen. For a certain "point brush", the conditions furnishing constant emission currents are chosen experimentally. Ther are 7 figures and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta im. M.V. Lomonosova (Division of Physics of Moscow State University imeni M.V. Lomonosov)

23734
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B116/B201

9,4300 (1072, 1165, 1385) also 1145, 1160, 1147

AUTH: Spivak, G. V., Sirotenko, I. G., and Ivanov, R. D.

TITLE: Micromagnetic structure of films obtained by cathode sputtering

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 6, 1961, 754 - 756

TEXT: A description is given of the application of intense cathode sputtering for the purpose of obtaining different ferromagnetic films. Compared with existing methods, this one is shown to display a number of advantages. The domain structure and its changes have been observed on ferromagnetic cobalt films, molybdenum-permalloy films (79Ni 17Fe 4Mo), and silicon-iron films (3.3% Si) with the aid of powder patterns. The characteristics of the change of the domain structure with a change of thickness have been established on molybdenum-permalloy films. Ferromagnetic films are usually obtained by vacuum evaporation or by electrodeposition. Such methods, however, display a number of essential drawbacks: 1) The chemical composition of the film differs from that of the initial material; 2) difficulties arise in the preparation of homogeneous films of a desired

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thickness. An attempt has been made by G. Siddall (Ref. 1: Proc. Inst. Electronics 3, 34, 1958) and G. Wehner (Ref. 2: Adv. in Electronics a. Electron Phys., 7, 239, 1955) to obtain films of different metals by cathode sputtering. A paper by L. Reimer (Ref. 3: Zs. f. Phys., 149, 425, 1957) describes attempts to prepare nickel films by cathode sputtering. These experiments, however, were conducted with relatively weak discharge currents and in a glow discharge; in addition, relatively high gas pressures (of 0.1 mm Hg and more) were applied. In such a case, a long time is needed to obtain films of a desired thickness, which, however, causes the film to be polluted and oxidized. The authors of the present paper have carried out an intense cathode sputtering in the plasma of a low-pressure discharge ($2 \cdot 10^{-2}$ – 10^{-3} mm Hg). The mean free path was in this case larger than the distance between the bombarded target and the base on which the film was formed. The sputtered specimens were introduced into the plasma as the third electrode with a negative potential of the order of 1 kv with respect to the cathode. A hot cathode was used to raise the density of the discharge current. The discharge current was of the order of some amperes, and the current applied to the sputtered specimen was of the order of some

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Micromagnetic structure of films...

milliamperes. The glass bases onto which the films were sputtered, were placed at a distance of 2 - 3 cm from the target. The setup used was so constructed as to allow several films to be submitted to sputtering simultaneously, without having to interrupt the sputtering process. The disk-shaped sputtered specimens had an area of 1 cm^2, which ensured a sufficient deposition of the sputtered material onto the base. The film thickness varied linearly with time. Therefore, the thickness could be easily regulated by changing the sputtering time; thus, films of any desired thickness were obtained. The film thickness was measured with an MIM-5(MII - 5) microinterferometer. The glass bases were heated up to 100 - 125° C. The films formed in a magnetic film of the order of 175 - 200 oersteds, which was parallel to the plane of the base. Quantitative chemical and spectroscopic analyses of films obtained by cathode sputtering and with different modes of operation showed that their composition did not differ from the initial components in the sputtered materials. The domain structure was observed on the films with the aid of powder patterns. When submitting molybdenum-permalloy films to sputtering, the specimen potential amounted to 800 v, the discharge current was 0.75 a, the density of the current to the specimen was 1.6 ma/cm, and the pressure was 9.10 mm Hg. The domain walls

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changed in appearance with an increase of the film thickness. The silicon-iron films, on which wedge-shaped powder patterns were established, were submitted to sputtering at a specimen potential of 700 v. a current density of 6 ma/cm^2, a discharge current of 1 a, and a pressure of $8 \cdot 10^{-3}$ mm Hg. The method described here for obtaining ferromagnetic films by intense cathode sputtering is characterized by the following circumstances: 1) It is possible to obtain high-quality films of different thicknesses under easily controllable conditions; 2) cathode sputtering may be applied with materials of any melting temperatures; 3) uniform sputtering and pure films are ensured; 4) most important, the films obtained display only small deviations from the composition of the sputtered ferromagnetic substances. [Abstracter's note: Essentially complete translation.] There are 2 figures and 3 non-Soviet-bloc references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova Fizicheskiy fakul'tet (Moscow State University imeni M. V. Lomonosov, Division of Physics)

SUBMITTED: September 16, 1960

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26689
S/056/61/041/005/004/038
B104/B108

26.2340

AUTHORS: Yurasova, V. Ye., Sirotenko, I. G.

TITLE: Cathode sputtering of single-crystal balls

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 5(11), 1961, 1359-1364

TEXT: Cathode sputtering of single-crystal balls of copper, tungsten, chromium, cobalt, germanium, iron, and an indium-antimony alloy has been carried out in a plasma of low pressure and high density (crypton pressure $\sim 5 \cdot 10^{-3}$ mm Hg). The ball-shaped specimens had a diameter of from 3 to 6 mm. During sputtering, the specimens were on a negative potential of from 1 to 10 kv. Current density was 5-7 ma/cm^2, in some experiments even 13-15 ma/cm^2. The sputtered substances were collected on spherical or cylindrical surfaces. The direction of emission of the sputtered particles was determined. From diamond-type or face-centered cubic lattices, the substances were chiefly sputtered in the [110] and [100] directions. From body-centered cubic lattices, the substances were chiefly sputtered in the [111] and [100] directions. The precipitation

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SIROTENKO, M.

Specialists need suitable preparation for new tasks. Muk.-elev. prom. 22 no.8:30 Ag '56. (MLRA 10:8)

1. Prepodavatel' L'vovskikh stantsionarnykh mezhoblastnykh kursov Zagotzerno.

(Grain handling--Study and teaching)

KURASOVA, V.V.; KVASHNINA, Ye.S.; KADYROV, N.T.; IBRAGIMOV, R.P.; MOREV, V.I.; ROGOZHKIN, A.I.; SIROTENKO, M.

Informatsion. Veterinariia 38 no.11:92-96 N '61 (MIRA 18:1)

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"Method of Studying the Daily Activity of the Larval Stages of Butterflies (Lepidoptera)," Dok. AN, 65, No. 4, 1949. Mbr., Khar'kov State Univ. im. A. M. Gor'kiy, -c1949-.

SIROTENKO, M. P. (Co-author)

See: LOTOTSKIY, B. V.

Lototskiy, B. V. and Sirotenko, M. P. - "Hemosporidiosis of smaller horned stock in Tadzhikistan," Soobshch. Tadzh. filiala Akad. Nauk SSSR, Issue 8, 1948, p. 26-29

SO: U-3566, 15 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 14, 1949).

SIROTENKO, M. P.

"Prophylactic measures of the fight against blood-parasitic diseases of agricultural animals."
Stalinabad. Tadzhikgosizdat, 1951. 28 pages with illustrations. (Administration of Agricultural Propaganda Ministry of Agriculture, Tadzhik SSR)

SO: Vet., May 1952, Unclassified.

LOTOTSKIY, B.V.; SIROTENKO, M.P.

Hemosperidiosis of cattle and horses in Tajikistan. Trudy AN Tadzh. SSR 5:119-141 '52. (MLRA 9:10)
(Tajikistan--Hemosperidia)(Ticks as carriers of disease)
(Cattle--Diseases and pests)(Horses--Diseases and pests)

USSR/Diseases of Farm Animals - Diseases Caused by Bacteria and Fungi. R-2

Abs Jour : Ref Zhur - Biol., No 14, 1958, 64641

Author : Sirotenko, M.P.
Inst : -
Title : On the Incidence of Spirochetosis in Poultry.

Orig Pub : S. kh. Tadzhikistana, 1956, No 9, 30-32.

Abstract : No abstract.

Card 1/1

COUNTRY : USSR R
CATEGORY : Diseases of Farm Animals. Diseases Caused by Helminths
ABS. JOUR. : RZhBiol., No. 6 1959, No. 26022

AUTHOR : Sirotenko, M. P.
INST. : Scientific Research Institute of Animal Hus-*
TITLE : Extensiveness of Dictyocaulosis and Other Lung Helminthiases of Sheep in Tadzhikistan

ORIG. PUB. : Tr. N.-i. in-ta zhivotnovodstva i veterinarii TadzhSSR, 1957, 1, 120-127
ABSTRACT : No abstract.

*bandry and Veterinary Medicine, TadzhSSR

CARD: 1/1

42

R

COUNTRY :
CATEGORY :

JOUR. : Veterinariya, No. 6 1959, No. 26017

AUTHOR :
INST. :
TITLE :

SOURCE PUB. :

ABSTRACT : and summer high-mountain pastures; maximum in-
cont'd. tensity of dictyocaulosis is observed in early spring; during the summertime the extensity and intensity of infestation decreases, and its new rise begins in the autumn. In lambs dictyocaulosis manifests itself from 2 months of age on, in May; infestation of lambs gradually increases during the summertime and attains its maximum in the winter-spring period. The infection of lambs with dictyocaulosis takes place on winter

CARD: 2/4

COUNTRY	:	R
CATEGORY	:	
ABS. JOUR.	:	RZhBiol., No. 6 1959, No. 26017
AUTHOR	:	
INST.	:	
TITLE	:	
ORIG. PUB.	:	
ABSTRACT (cont'd.)	:	dehelminthization of young sheep up to 2 years of age in November and February, and of adult sheep in December and January; change of pastures; separation of lambs from adult sheep; mass diagnostic investigations.-- N. V. Demidov.
CARD:		4/4

COUNTRY : USSR
CATEGORY : Zooparasitology. Parasitic Protozoa. Flagellata G

ABS. JOUR. : RZhBiol., No. 2 1959, No. 5676

AUTHOR : Sirotenko, M. P.
INST. : Scientific Research Institute of Animal Hus-*
TITLE : A Case of Trypanosomiasis of Cattle

SRIG. PUB. : Tr. N.-i. in-ta zhivotnovodstva i veterinarii, Tadzh. SSR, 1957, 1, 186
ABSTRACT : No abstract

*bandry and Veterinary Medicine, TadzhSSR

CARD: 1/1

KEKUKH, A.M., kand. biolog. nauk; SIROTENKO, O.D., aspirant

Agroclimatic characteristics of the role of fallows. Zemledelie 27 no.9:17-21 S '65. (MIRA 18:10)

1. Ukrainskiy nauchno-issledovatel'skiy gidrometeorologicheskiy institut.

SIROTENKO, O.D.

Using electronic computers for the statistical analysis of agrometeorological data. Meteor. i gidrol. no.6:30-34 Je '64 (MIRA 17:8)

1. TSentral'nyy institut prognozov.

SIROTENKO, O.D.

Agroclimatic calculations on the basis of statistical relations. Meteor. i gidrol. no.7:20-26 Jl '65. (MIRA 18:6)

1. Institut prikladnoy geofiziki AN SSSR.

SIROTENKO, V.D., inzh.; TIBILOV, T.A., inzh.

Some conclusions drawn from operational experience with diesel locomotives. Zhel. dor. transp. 37 no.8:24-25 Ag '55. (MIRA 12:8)

(Diesel locomotives)

SHAVERDOV, Yuriy Shamirovich; KRAVCHINA, Ivan Petrovich; SIROTENKO, V.D., inzhener, redaktor; YUDSON, D.M., tekhnicheskiy redaktor.

[Testing and regulating the diesel generator of locomotives; experience of the Gudermes depot of the Ordzhonikidze railroad] Ispytanie i regulirovka dizel'generatornoi ustanovki teplovoza; opyt depo Gudermes Ordzhonikidzevskoi zh.d. Moskva, Gos.transp. zhel-dor.izd-vo, 1956. 49 p. (MLRA 9:6)
(Diesel locomotives--Testing)